

## Contributors to this Issue

C. J. DAVISSE, B.Sc., University of Chicago, 1908; Ph.D., Princeton University, 1911; Instructor in Physics, Carnegie Institute of Technology, 1911-17; Engineering Department of the Western Electric Company, 1917-25; Bell Telephone Laboratories, 1925-. Dr. Davisson's work since coming with the Bell System has related largely to thermionics and electronic physics.

G. W. ELMEN, B.Sc., University of Nebraska, 1902; M.A., 1904; Research Laboratories of the General Electric Company, 1904-06; Engineering Department of the Western Electric Company, 1906-25; Bell Telephone Laboratories, 1925-. Mr. Elmen's principal line of work has been magnetic investigations. He is the inventor of the permalloy alloys. For this he was awarded the John Scott Medal in 1926 and the Elliott Cresson Medal in 1928.

J. G. FERGUSON, B.Sc., University of California, 1915; M.Sc., 1916; Research Assistant in Physics, 1915-16; Engineering Department, Western Electric Company, 1917-25; Bell Telephone Laboratories, 1925-. Mr. Ferguson's work has been in connection with the development of methods of electrical measurement.

L. H. GERMER, A.B., Cornell, 1917; M.A., Columbia, 1922; Ph.D., Columbia, 1927; Engineering Department, Western Electric Company, 1917-1925; United States Army, 1917-1919; Bell Telephone Laboratories, 1925-. Dr. Germer has been engaged chiefly upon work in thermionics and electron scattering.

C. H. G. GRAY, B.Sc., Massachusetts Institute of Technology, 1918; Instructor, Electrical Engineering, Massachusetts Institute of Technology, 1918-19; Engineering Department, Western Electric Company, 1919-25; Bell Telephone Laboratories, 1925-. Mr. Gray, in addition to his work on the master reference system, has been engaged in the development and application of machine testing methods for the inspection of transmitters and receivers.

CHARLES H. GREENALL, M.E., Lehigh University, 1922; Engineering Department, Western Electric Company, 1922-25; Bell Telephone Laboratories, 1925-. Mr. Greenall's work has involved investigation of telephone apparatus, and testing methods as applied to specification requirements and development of metallic materials.

F. R. LACK, B.Sc., Harvard, 1925; Engineering Department, Western Electric Company, 1913-22; First Lieutenant, Signal

Corps, A.E.F., 1917-19; Harvard, 1922-25; Bell Telephone Laboratories, 1925-. Mr. Lack has been engaged in experimental work connected with radio communication.

W. A. MARRISON, Royal Flying Corps, later Royal Air Force, Canada, 1917-18; B.Sc., Queens University, Canada, 1920; A.M. in Physics and Mathematics, Harvard University, 1921; Western Electric Company, 1921-25; Bell Telephone Laboratories, 1925-. Mr. Marrison is engaged in the study of picture transmission and methods for the production of constant frequency.

W. H. MARTIN, A.B., Johns Hopkins University, 1909; B.Sc., Massachusetts Institute of Technology, 1911; American Telephone and Telegraph Company, Engineering Department, 1911-19; Department of Development and Research, 1919-. Mr. Martin's work has related particularly to transmission of telephone sets and local exchange circuits, transmission quality and loading.

W. O. PENNELL, B.Sc., Massachusetts Institute of Technology, 1896; Instructor, Lafayette College, 1896-1898; Equipment and Traffic Engineer, Bell Telephone Company of Philadelphia, 1898-1902; Engineering Department, American Telephone and Telegraph Company, 1902-03; Chief Engineer, Missouri and Kansas Telephone Company, 1903-12; Southwestern Bell Telephone Company, 1912-29, and for the last eleven years their Chief Engineer. In addition to his activities as an engineer, Mr. Pennell has from time to time contributed articles of a mathematical nature to various technical publications.

J. R. TOWNSEND, Engineering Department, Western Electric Company, 1919-25; Bell Telephone Laboratories, 1925-. Mr. Townsend has been largely concerned with the testing of telephone apparatus and more recently with the development of requirements of test for metallic materials.